

sulcato. Caput antice deflexum, fronte semicirculari marginato. Mandibulæ membranaceæ? Maxillæ corneæ, lobo apicali in unguiculum curvatum acutissimum producto. Antennæ 9-articulatæ. Prothorax fere rotundatus, antice truncatus, medio profunde sulcatus. Elytra apicibus setosis, singulo 4-sulcato. Pedes lati, compressi, tibiarum apicibus angulatis.

Chætopisthes fulvus, Westw. *Fulvus, nitidus, capite et prothorace parum castaneis, hoc angulis posticis basique transverse impresso, impressionibus setulosis.* Long. corp. lin. $1\frac{3}{4}$.—Hab. in India Centrali. D. Boys.

A memoir on the characters and geographical distribution of those groups in nature which are considered as typical of families, by G. R. Waterhouse, Esq., was also read, which led to an extended discussion on the geography of insects.

MISCELLANEOUS.

Apparatus of Hearing in Mollusks. By Dr. FREY.

THE observations of Dr. Frey have been especially directed to the embryo of *Limnæus stagnalis*. The auricular vesicle is not perceptible in this mollusk until the singular rotatory movements of the embryo have ceased, and when the animal already crawls on the internal side of its shell. It is easy then to observe, on the anterior part of the body, the rudiments of the tentacles, the eyes with their pigment, and the tongue with its characteristic epithelium. On each side of the base of the tongue are found the auditory vesicles. They are spherical, their contour is simple, and their diameter from $\frac{1}{60}$ to $\frac{1}{56}$ of a line. At first they appear to contain in their interior only a transparent liquid, and are then, like the eye, unconnected with the central parts of the nervous system. There are soon developed in the liquid one or two small corpuscles, the form, the size, and the oscillatory movements of which are quite similar to those of the otolithes of the perfect animal; the vesicle which contains them presents on its margin a double contour, resulting probably from the thickness which the sides acquire. The size of the otolithes is from $\frac{1}{450}$ to $\frac{1}{300}$ of a line; their number slowly increases, and reaches to 20 when the *Limnæus* quits its shell; the diameter of the vesicle is, at this period, $\frac{1}{40}$ of a line. By the side of the otolithes occur other smaller corpuscles, which often do not attain the size of $\frac{1}{1000}$ of a line. The number of the otolithes and the size of the auditory vesicle continue afterwards to increase, at the same time that the animal increases; in the adult state, from 100 to 200 otolithes may be counted, and the diameter of the vesicle varies from $\frac{1}{16}$ to $\frac{1}{10}$ of a line.

The development of the auditory apparatus presents the same phenomena in *Physa*, *Paludina* and the terrestrial Gasteropods in general (*Helix*, *Limax*, &c.); the only differences are in the size of the parts.

In the bivalves, the apparatus of hearing only contains a single otolith of large dimensions, which fills the cavity of the vesicle.

This same arrangement occurs again in the embryo of these mollusks before they issue from the egg; the otolithe, smaller than in the adult, presents, like it, very active oscillatory movements.—*Wiegmann's Archiv*, 1845, p. 217.

Comparative Anatomy of the Vocal Organs of Birds. By Prof. MÜLLER.

The merit of the first examination of the vocal apparatus of birds belongs to Cuvier, to whom is also due the greatest part of the facts relative to its organization. More recently, M. Nitzsch has sought to derive advantage from the examination of the inferior larynx for the classification of birds, which has always been, as is well-known, one of the most embarrassing problems of the natural methods. M. Müller has recently made a long series of observations on the vocal organ of the *Passerinae*; the results of his labours are as yet only partly known; a detailed description will soon be published in the *Mémoires de l'Académie* of Berlin. Meanwhile we shall here point out some general conclusions of this investigation, which is impatiently looked for, as is everything from the pen of the illustrious Berlin professor.

M. Müller concludes from the facts which he has observed, that the singing *Passerinae* cannot form a natural division, and, in opposition to the opinion of M. Nitzsch, he affirms that the *Picidae* cannot be separated from them. The most natural groups of the order *Passerinae* contain types which differ in the organization of their larynx, and the variabilities of that apparatus render it little suitable to serve for classification. It is the less so, as the song may be produced by apparatus of very different structure. The order *Passerinae* must probably be preserved in its most extended limits, comprising even the *Syndactyles* and the *Climbers*, and it must include, both those birds which have the most perfect vocal apparatus, and others in which it seems to be reduced to its greatest simplicity.

The two most common forms of vocal organ among birds are :— 1st, the muscular vocalizing apparatus, formed on the type of that of our European singing-birds; 2nd, the form with a single muscle, thick or thin. It is to be remarked, that the first form prevails in Europe and in Africa, and that the second is more common in America. In consequence, the forests of the old world contain more real singing-birds; those of the new world chiefly abound in birds with a loud but little-varied voice, and resound much oftener with shrieks than with songs. Beside these two widely distributed forms, there are many other more special laryngian organizations: the most complicated is that of the Parrots.

M. Müller's memoir will contain numerous facts in detail, and engravings of all the forms described.—*Proc. Berlin Academy*, June 1845.